

WHAT IS CLAIMED IS:

1. A process for using liquid print color in a printing process
in which the print color is transferred from one transfer device onto another
5 transfer device and/or onto a printing medium, comprising the step of: reducing at
least one liquid component of the print color.

2 A process according to Claim 1, wherein the reducing step
occurs before the transfer.
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3. A process according to Claim 1, wherein the reducing step
occurs after the transfer.

4. A process according to Claim 1, wherein the reducing step
15 occurs in part before and in part after the transfer.

5. A process according to Claim 1, wherein the reducing step
is accomplished by heating the print color.

6. A process according to Claim 5, wherein the heating is
20 accomplished by irradiation with microwaves.

7. A process according to Claim 6, wherein standing
microwaves are used which are generated by at least one resonator.
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8. A process according to Claim 6, wherein the absorption
capacity of the print color is raised by using an additive with a high absorption
capacity for microwaves.

9. A process according to Claim 6, wherein the absorption
30 capacity of the print color, is raised by an admixture of a liquid component with a
high absorption capacity for microwaves.

10. A process according to Claim 9, wherein the admixture or adulteration is accomplished azeotropically.

5 11. A process according to Claim 9, wherein the admixture or adulteration is accomplished with at least two liquid components of unlike phases, of which at least one liquid component has a high absorption capacity for microwaves.

10 12. A process according to Claim 11, wherein one of the liquid components is emulsified into the other liquid component.

13. A process according to Claim 12, wherein the emulsification is supported or promoted by at least one additive.

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14. A process according to Claim 5, wherein the printing medium is heated.

20 15. A process according to Claim 6, wherein at least one physical process parameter of the irradiation with microwaves is controlled or regulated as a function of a parameter that is correlated with the energy input into the printing medium onto which print color has been transferred.

25 16. A process according to Claim 15, wherein the output of the microwave emitter is regulated as a function of the energy input, such that when the energy input is too low the output is raised and when the energy input is too high the output is lowered so that on average an essentially constant, suitable energy input is maintained.

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17. A process according to Claim 16, wherein the speed of the printing medium's travel through an area being irradiated with microwaves is regulated as a function of energy input such that when the energy input is too low the printing medium is fused at a lower speed and when the energy input is too high the printing medium is fused at a higher speed.

18. A process according to Claim 15, wherein the microwave emitter is adjusted as a function of energy input.

19. A process according to Claim 15, wherein the temperature of the printing medium is used as the parameter to be correlated with the energy input.

20. A process according to Claim 15, wherein the efficiency of the energy input is used as the parameter to be correlated with the energy input.

21. A process according to Claim 15, wherein standing microwaves are used which are generated by at least one resonator, and the reflected power or energy of the resonator containing either partially or wholly a printing medium is measured as the parameter to be correlated with the energy input and is then compared with the output from the microwave emitter.

22. A process according to Claim 21, wherein in a microwave frequency range between 100 MHz and 100 GHz a frequency is selected which is outside of the approved ISM frequencies and which in a ratio of microwave energy absorbed by the toner to the total microwave energy absorbed favors increased microwave energy absorbed by the toner.

23. A process according to Claim 22, wherein a resonator for the microwaves is used which oscillates partially or completely with a component of movement that is perpendicular to the direction of travel of the printing medium that is passing through the area being irradiated with microwaves.

24. A printing machine that transfers liquid print color during a printing process from one transfer device onto another transfer device and/or onto a printing medium, comprising: at least one mechanism for reducing at least one liquid component of the print color.

25. A printing machine according to Claim 24, wherein the mechanism for such reduction is installed upstream of a transfer device.

26. A printing machine according to Claim 24, wherein the mechanism for such reduction is installed downstream from a transfer device.

27. A printing machine according to Claim 24, wherein a mechanism for such reduction is installed both upstream and downstream of a transfer device.

28. A printing machine according to Claim 24, wherein the mechanism for such reduction is a heating mechanism.

29. A printing machine according to Claim 28, wherein the heating mechanism incorporates at least one microwave irradiator.

30. A printing machine according to Claim 29, wherein the heating mechanism incorporates at least one resonator for generating standing microwaves.

31. A printing machine according to Claim 30, wherein said at least one resonator for generating standing microwaves generates a standing microwave approximately perpendicular to the plane of the printing medium.

32. A printing machine according to Claim 31, wherein more than one resonator is used, and the resonators are mounted such that they are distributed across the width of the printing medium.

5 33. A printing machine according to Claim 30, wherein more than one resonator is used and the resonators are arranged such that they are staggered one from another.

10 34. A printing machine according to Claim 30, wherein the resonators are arranged such that they have overlapping effective widths.

35. A printing machine according to Claim 30, wherein the absorption of microwave energy by the printing medium can be optimized in the following resonators while the preceding resonators are turned on.

15 36. A printing machine according to Claim 30, wherein the width of the resonator at right angles to the path of the printing medium is selected such that the presence of a relatively homogeneous microwave field strength across this width is assured.

20 37. A printing machine according to Claim 36, wherein the resonator has a width of up to about 20 cm, but preferably about 4 cm to about 8 cm.

25 38. A printing machine according to Claim 30, wherein the length of the resonator in the direction of the printing medium's travel is about 1 cm to about 20 cm.

30 39. A printing machine according to Claim 30, wherein several resonators preferably two each, are operationally connected to a mutual microwave source.

40. A printing machine according to Claim 39, wherein the level of microwave dispersion of each of the resonators connected to the same microwave source is symmetrical with that of the other resonator.

5 41. A printing machine according to Claim 40, wherein the level of microwave dispersion of each of the resonators connected to the same microwave source is the same.

10 42. A printing machine according to Claim 24, is a multicolor printing machine or as a component of such a multicolor printing machine that operates in accordance with an electrophotographic printing process.

15 43. A printing machine according to Claim 42, wherein measures are taken to reduce the radiation scatter.

20 44. A printing machine according to Claim 43, wherein resonator parts that are divided from one another by the printing medium travel path that runs between them are connected to one another by means of a suitable electrically conductive connector.

25 45. A printing machine according to Claim 30, wherein more than one resonator is used and the maxima of the resonators are offset from one another by the length of the microwave λ divided by twice the number of resonators.

30 46. A printing machine according to Claim 45, wherein more than one resonator is used and the maxima of each of the following resonators are offset from those of the preceding resonator by the microwave length λ divided by twice the number of the resonators.

47. A printing machine according to Claim 46, wherein more than two resonators are used, and the maxima of each of the following resonators are offset uni-directionally from those of the preceding resonator by the microwave length λ divided by twice the number of the resonators.

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48. A printing machine according to Claim 47, wherein an equal number of more than two resonators is used and the resonators are distributed in $N/2$ groups each of which is $N/2$ with microwave field strength maxima that are offset from one another by λ/N where N is the number of resonators and λ is the length of the microwave, and the groups or the resonators are offset from one another by $\lambda/2N$.

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49. A printing machine according to Claim 48, wherein the absorption of the printing medium in the following resonators can be optimized while the preceding resonators are turned on.

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50. A printing machine according to Claim 49, wherein the entire resonator or a part of the resonator can oscillate.

51. A printing machine according to Claim 45, wherein the width of the resonator along the path of the printing medium is selected to be as small as possible in order to simplify handling of the printing medium, and is selected to be big enough to maintain the electromagnetic field in the resonator below the arcing level.

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52. A printing machine according to Claim 45, wherein the width of the resonator is a function of the printing medium's speed of travel and/or of the microwave energy irradiated into the resonator.

53. A printing machine according to Claim 51, wherein the resonator is about 1 to about 10 cm wide.

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54. A printing machine according to Claim 45, wherein it is a multicolor printing machine that operates in accordance with an electrophotographic printing process.

5 55. A printing machine according to Claim 45, wherein measures for reducing radiation scatter are taken.

56. A printing machine according to Claim 45, wherein the alignment of the resonators deviates by 90° from that of the paper path.